PATENT COOPERATION TREATY

CONFIRMATION

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

5 AUG 2005

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PCT

WRITTEN OPINION
(PCT Rule 66)

Date of mailing *(day/month/year)*	2 AUG 2005
Applicant's or agent's file reference: LAM/EKCB/20667. 2	**REPLY DUE** within **TWO MONTHS** from the above date of mailing

International Application No.	International Filing Date *(day/month/year)*	Priority Date *(day/month/year)*
PCT/SG2003/000274	20 November 2003	20 November 2003

International Patent Classification (IPC) or both national classification and IPC
Int. Cl. [7] C12N 15/11, C12N 15/01

Applicant
AGENCY FOR SCIENCE, TECHNOLOGY AND RESEARCH et al

1. This written opinion is the **first** drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:.

I	[X]	Basis of the opinion
II	[ ]	Priority
III	[X]	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	[ ]	Lack of unity of invention
V	[X]	Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
VI	[ ]	Certain documents cited
VII	[ ]	Certain defects in the international application
VIII	[X]	Certain observations on the international application

3. The **FINAL DATE** by which the international preliminary examination report must be established according to Rule 69.2 is:
20 March 2006

The applicant is hereby **invited to reply** to this opinion.

When? See the **Reply Due** date indicated above. However, the Australian Patent Office will not establish the Report before the earlier of (i) a response being filed, or (ii) one month before the **Final Date** by which the international preliminary examination report must be established. The Report will take into account any response (including amendments) filed before the Report is established.
If no response is filed by 1 month before the Final Date, the international preliminary examination report will be established on the basis of this opinion..
Applicants wishing to have the benefit of a further opinion (if needed) before the report is established should ensure that a response is filed at least **3 months before the Final Date** by which the international preliminary examination report must be established.

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3.
For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4*bis*.
For an informal communication with the examiner, see Rule 66.6.

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WRITTEN OPINION

International application No.
PCT/SG2003/000274

I. Basis of the opinion

1. With regard to the **elements** of the international application:*

[X] the international application as originally filed.

[ ] the description, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the claims, pages , as originally filed,
pages , as amended under Article 19,
pages , filed with the demand,
pages , received on with the letter of

[ ] the drawings, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[ ] the language of publication of the international application (under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

[ ] contained in the international application in printed form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form.

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages

[ ] the claims, Nos.

[ ] the drawings, sheets/fig.

5. [ ] This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*

WRITTEN OPINION

International application No.
PCT/SG2003/000274

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos: **25-30.**

because:

☐ the said international application, or the said claim Nos. relate to the following subject matter which does not require an international preliminary examination *(specify)*:

☐ the description, claims or drawings *(indicate particular elements below)* or said claims Nos. are so unclear that no meaningful opinion could be formed *(specify)*:

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claim Nos. **25-30**

2. A written opinion cannot be drawn due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

V. **Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	**1-24 and 31-34**	**YES**
	Claims		**NO**
Inventive step (IS)	Claims	**1-24 and 34**	**YES**
	Claims	**31-33**	**NO**
Industrial applicability (IA)	Claims	**1-24, 31-34**	**YES**
	Claims		**NO**

2. Citations and explanations

The following documents identified in the International Search Report have been considered for the purposes of this report:

D1: Branda, R. F., *et al*; MUTATION RESEARCH, (1999 Jun 30) 427 (2) 79-87.

D2: Szala, S., and Chorazy, M; BULLETIN DE L'ACADEMIE POLONAISE DES SCIENCES, SERIE DES SCIENCES BIOLOGIQUES (1969), 17(5), 277-84

D3: Zacharias, M., and Sklenar, H.; BIOPHYSICAL JOURNAL, (2000), Vol 78: 2528-2542

D4: Fox , K. R., et al; NUCLEIC ACIDS RESEARCH, (2000), Vol 28 (13): 2535-2540.

NOVELTY AND INVENTIVE STEP:

The invention lies in a method of enriching GC content of a DNA molecule, which results in a functional alternative to natural evolution process. GC enrichment is done by providing a DNA molecule in which some of the A residues pair with U residues and then replicating the DNA so as to replace the U residues with G residues, thereby increasing the GC content of the DNA molecule. The method is also used as means of making mutant polypeptides. None of the prior art documents searched disclose such a method for GC enrichment or for making mutations. As such, the invention claimed in claims 1-24 and 31-34 appears to be both novel and inventive.

Claims 31-33 do not involve an inventive step. The claims include kits that contain dUTP and an agent which is capable of increasing the polarity of a replication reaction medium. Both components included in the kit are not novel and are well known in the art. As such, putting together known integers to make a kit, the construction of which is not novel, does not involve an inventive step.

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. In Claims 31-33 the use of the term "for" does not restrict the claims to a specific use, it simply defines a kit comprising independent known integers capable of use in GC enrichment of a DNA molecule. Therefore in the absence of limitation of the claims to a kit "when used for" GC enrichment of a DNA molecule claims are not fully supported by the specification.

2. Claims 25-30 relate to a mutant AlbD polypeptide of *Pantoea dispera per se*. The claims relate merely to a mutant of the polypeptide and do not contain any of the technical features of the invention. The invention appears to be a method of enriching the GC content of a DNA molecule or of making mutations by using the GC enrichment method. In contrast, the claims are not limited to this method or of creating mutations using this method. The claims simply define a mutant polypeptide that may have been produced by any means other than the one disclosed in the specification and is therefore not restricted to the method of the invention. As such, these claims lack an essential feature of the invention and are not are fully supported by the description.